IN THE UNITED STATES DISTRICT COURT FOR THE

SOUTHERN DISTRICT OF NEW YORK

74C1050

MIDWAY MANUFACTURING COMPANY:		Deposition of
vs.	:	Ralph Baer
THE MAGNAVOX COMPANY	:	ELEVENTH DAY
and	:	74 Civ 1657 CBM
SANDERS ASSOCIATES, INC.	:	

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IN THE UNITED STATES DISTRICT COURT FOR THE

NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION

THE MAGNAVOX COMPANY, et al	:	Consolidated Actions
vs.	:	74 C 1030 74 C 2510 75 C 3153 75 C 3933
BALLY MANUFACTURING CORPORATION, et al	:	

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Continued deposition taken pursuant to subpoena and notice at the Sanders Associates, Inc.; Headquarters; Spit Brook Road; Nashua, New Hampshire; Tuesday, February 17, 1976; commencing at ten o'clock in the forenoon.

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ORIGINAL

PRESENT:

For Midway Manufacturing Company, Bally Manufacturing Corporation and Empire:

Donald B. Welsh, Esq., 135 South LaSalle Street, Chicago, Illinois.

For Atari, Inc.:

Flehr Hohbach, Test, Albritton & Herbert, by Edward S. Wright, Esq., 160 Sansome Street, 15th Floor, San Francisco, California.

For Sanders Associates, Inc., and Magnavox Company:

James T. Williams, Esq., 77 West Washington Street, Chicago, Illinois.

For Sanders Associates:

Louis Etlinger, Esq., and Richard I. Seligman, Esq., Daniel Webster Highway, South, Nashua, New Hampshire.

Stenotype Reporter:

Ronald J. Hayward

RALPH BAER

called as a witness, having been previously sworn, was further examined and continued his testimony as follows:

(Interrogatories by Mr. Welsh.)

Q. Mr. Baer, at our last session, you indicated that circuits of Exhibits 9-117 and 119 and 120 had been incorporated into hardware that was present in this room, is that correct?

A. Yes.

Q. And these circuits, if I understand correctly, include the differentiating and integrating circuits for producing different ball movement depending upon the speed which the paddle hits the ball in the ping pong game?

A. That is right.

Q. I wonder if you could point out that piece of hardware to us?

A. That is it. (Indicating)

MR. WELSH: I'd like to ask the reporter to mark this as Exhibit 33.

(Whereupon, Exhibit 33 was marked for identification.)

Q. Now, Mr. Baer, would you identify Exhibit 33 for the record?

A. Exhibit 33 is a breadboard assembly consisting of

a chassis roughly 14 by 16 by 2 inches deep which contains a number of subassemblies, also breadboards, with electronic components and some batteries. In addition to that, there is the words Round Spot Hockey on the inside of the chassis in what appears to be Bill Rusch's handwriting.

Q. Is this a complete TV game apparatus which could be used by itself with a TV set or was it intended to be used with something else?

A. It was intended to be used with a TV set, although portions of it are missing now.

Q. That bears a label with the No. 5 on it where the exhibit number was marked, does it not?

A. Yes, it does.

Q. Did you place that number on there?

A. Yes, I did.

Q. And that was in connection with your getting together all of the TV games?

A. That is right.

Q. I believe you stated that this was not demonstrated to the TelePrompter people?

A. That is correct, it was not.

10 Q. What was done with this breadboard?

A. To the best of my recollection, it was operational at the time it was built; however, we went back to simpler games than those which are represented by ball games of the type you characterized earlier.

11 Q. You mean earlier today?

A. Today. That is, those that have ball spot that is responsive to the manner in which it is intercepted by player spots. And, in the course of time, the chassis was cannibalized. It was not used any further.

12 Q. When was this breadboard originally built?

A. Again only by reference to the drawings, it was built concurrently with the time that Harrison did the drawings in 9-120, 119 and 117. Sometime in November or December of '67.

13 Q. Now, were all of these drawings, circuits of all of these drawings, 9-117, 118, 119, 120, incorporated in the breadboard?

MR. WILLIAMS: If you know, Mr. Baer.

A. I don't know. My guess is that they were.

14 Q. Now, this was just before the demonstrations of

the games to TelePrompter using Exhibit 30, were they not?

A. Well, it was around that time. I would say it was before the TelePrompter demonstrations which were in January of '68.

Q. Do you recall any particular reason for not demonstrating this more clearly indicated game?

A. Yes, the overriding reason was that the much greater circuit complexity was accompanied by a commensurate differential in the ~~building~~ BILL OF materials and the resultant product cost was just out of the question for any consideration, at least at that time, in connection with the CATV TV games.

Q. Now, in Exhibit 9 in the numbered documents just preceding the ones that we have been talking about are what appear to be rough drawings of different game ideas. Did they have anything to do with the circuitry of Exhibits 9-117 through 9-120?

MR. WILLIAMS: May we be more specific as to what drawings you are referring to?

A. I recall that we had

MR. WELSH: The ones that he has unfolded here.

THE WITNESS: I think the ones

Mr. Welsh has reference to is 9-112, 113,114, 115, 116. To answer your question, Mr. Welsh,these are all done in Rusch's handwriting and they do have a relationship to 9-119 and 117 and 118 in that most of them are game ideas that require the type of ball action or hit spot action which are the subject of those three schematics and block diagrams.

Q. And by those schematics and block diagrams you are referring to Exhibits 9-117 through 9-120?

A. That is correct.

Q. Were any of these various game ideas there depicted in Exhibits 9-113 to 9-116 actually tried out using the circuitry of Exhibits 9-117 to 1-120?

A. It is hard to recall now because some of these have been done more recently. The answer is I don't know.

Q. Referring to the bottom portion of Exhibit 9-115, all under the title handball, " appears to bounce off the edge of the TV screen," do you recall if that much was done at that time?

A. I recall that we had wall bounce, but I am quite certain that we had actual wall symbols.

MR. WILLIAMS: Would you read

that answer back?

(Whereupon, the previous answer was read back by the reporter.)

Q. This was around the end of 1967 and early 1968?

A. Yes.

Q. I see you are looking at Exhibits 9-119 and 120; did you find in those circuits any circuitry for generating wall symbols?

A. No, sir.

Q. Other than having wall symbols, was there at that time just a bounce off of the edge of the screen?

A. I don't recall and it doesn't show here either in 117 through 119.

Q. Was Mr. Harrison the one who actually built this apparatus and model, Exhibit 33?

A. Yes, he was.

Q. Do you recall what was next in the development of the TV games after the TelePrompter demonstrations and after the construction of this breadboard, Exhibit 33?

A. Well, in a general way, as I just mentioned a minute

ago, we went as far as completing Rusch's hockey game to the point where there was a complete game with all the features of wall bounce and incorporating the ~~peak~~ de/dt ball action we discussed earlier. And then proceeded no further because of the complexity of the system, as I mentioned earlier. Concurrently we continued to develop the simpler game which I would characterize as the digital version of the two that appeared in the final I R & D report which characterized the two systems as analogue and digital, and I am referring to Exhibit 26-11 under the heading digital circuit system.

Q. And is that the same as Exhibit 9-197 to 9-223?

MR. WILLIAMS: If you know, Mr. Baer.

THE WITNESS: 197, you said?

Q. Yes.

MR. WILLIAMS: Well, 9-197 is the cover sheet entitled patent disclosure sheet which obviously doesn't appear in Exhibit 26.

THE WITNESS: Well, the answer is no, you are looking at two different reports.

MR. WELSH: Off the record.

(Discussion off the record.)

27 Q. You stated you concurrently went to the digital version of the TV game referred to in Exhibit 26, could you describe what was done in that regard?

A. Well, again I think I would have to refer to the material in Exhibit 9 and others before us to refresh my memory.

28 Q. Would you do that, please?

(Discussion off the record.)

THE WITNESS: Looking at both Exhibits 9 and 23, it appears as though work on the games of the type in Exhibit 33 went on clear through 1968 and at the same time there was a considerable amount of attention paid to the rifle electronics, sometimes called gun electronics. In January, for example, we have records of Harrison's continuing to work on complete games including a rifle.

29 Q. What exhibits are you referring to?

A. 23-186 through 23-193 show that activity which

A. used Rusch's slicing circuit for spot generation,

Q. but on the same date as the last of these references,

A. 1-26-68, we have a schematic done by Harrison,

23-194, which shows the digital spot generators. So somewhere in January we switched over to digital spot generation. 23-197 shows a complete game using three digital spot generators for ball and player symbols plus one for a centerline net symbol. So all this ~~has a~~ by way of saying that we must have continued the develop ment work of the digital game box in December of '67 and January of '68.

30 Q. Now, there is no date, is there, on the exhibit - - -

A. 23-197?

31 Q. Yes, Exhibit 23-197.

A. No, there isn't.

MR. WILLIAMS: Excuse me, there is something at least in the upper left-hand corner.

THE WITNESS: Well, there is a handwritten note up there that says, "goes with 11-17-68." I don't understand that reference.

32 Q. But, in any event, Exhibit 23-197 is a diagram of a complete game using the digital spot generation?

A. That is correct.

33 Q. Was this circuitry ever incorporated into hardware?

A. I am sure it must have been because that is really

A. a schematic of an existing piece of hardware.

34 Q. Can you tell from any of the other documents whether that was built; and, if so, when?

A. That is what I am trying to determine, Mr. Welsh, it is not easy.

35 Q. Can you tell us from Exhibit 26-8, which was the final report of the NKM TV game project whether at least, as of that date of August 5, '68, the digital circuit design had been completed?

A. Well, I would have to go to 26-11 to do that. The answer to your question is, no, you can't tell from 26-11 or 12, for that matter, just exactly what the status of the hardware was at that time.

36 Q. Now, when Exhibit 26-11 refers to the digital circuit system, was that system the one that you had evolved originally or the later one which you indicated is the subject of Exhibit 23-197?

A. It is largely the earlier one which we had had right along before Rusch's voltage slicing method of spot generation came along.

37 Q. You say you are quite sure that the circuitry of Exhibit 23-197 was incorporated into hardware, is that hardware still available?

A. I would think it should be in this room. I would have to doublecheck. Just to clarify one thing, what my confusion is, 197 seems to have a three-position switch for three games; on the other hand, 198 and all the material that follows it through 211A, describes pretty much the same circuitry, but seems to address a lot more games than just three, so that is why I have a problem deciding on which is which here. Let me go look for the appropriate chassis in this room. Mr. Welsh, I believe that this small breadboard chassis, the box marked No. 6, is the next piece of hardware in this sequence, but it would take a little closer look to see if it corresponds to 197 or some other schematic.

Q. MR. WELSH: Would the reporter please mark this breadboard No. 6 as Exhibit 34?

(Whereupon, Exhibit No. 34 was marked for identification.)

THE WITNESS: Well, without spending more time on it, Mr. Welsh, it looks like Exhibit 34 corresponds to 23-197 and 23-196, the

schematic for the rifle which apparently plugged into a small receptacle in the corner of the chassis on this exhibit.

38 Q. Who built that Exhibit 34?

A. Bill Harrison did. The only thing that is missing in this chassis compared to 23-197 is the RF oscillator.

39 Q. And where is that shown?

A. In the lower left-hand corner of 23-197.

40 Q. Can you tell whether it was ever in the breadboard?

A. No, it doesn't look that way, Mr. Welsh. It is a very clean breadboard, nothing seems to have been removed physically. At least it doesn't appear that way, which doesn't mean that the oscillator couldn't have lived on a separate board externally, but I can't recall just what happened here.

41 Q. Does that breadboard, Exhibit 34, have any relation to these other Exhibits 23-198 through 23-211A?

A. I am sorry, Mr. Welsh, I wasn't concentrating; can I have the question once more?

MR. WELSH: Would you read the question?

(Whereupon, the previous question was read back.)

by the reporter.)

THE WITNESS: I would say that those schematics are accurate representations of the circuits in Exhibit 34.

Q. And you are speaking of Exhibits 23-203 to 23-211A?

A. Yes, sir. Again with the exception of the RF oscillator on 23-204, for example.

Q. What is the function of the RF oscillator?

A. It is needed if you intend to enter the antenna terminals of a TV set. I would say to go back to your question, that 23-198 to 211A go beyond this chassis; that is, the chassis of Exhibit 34, and I think that might be because there may be another version that has essentially the same schematics, but had additional capability in it. I think that is the next exhibit. The physical hardware exhibit coming along, and I have a strong suspicion that the same schematics were used over again, but amended and added to for that next model.

Q. Now, Exhibits 23-198 through 23-202 do not have any dates, do they?

A. That is correct.

Q. Are the other exhibits of that group, 23-203 through

23-211A dated?

A. Yes, they are.

46 Q. And what dates do they bear?

A. Well, there are two sets both in Harrison's handwriting. The earlier date on all those exhibits is 1-20-69. That is crossed off and above it is the date 8-21-69 with WLH, Harrison's initials, next to the new date.

47 Q. Do you know what those different dates indicate?

A. No, but I guessed at it just a minute ago, that the original date has to do with this box; that is, Exhibit 34, and that when we went on to the next box, Harrison used the ~~next~~ same schematic and crossed out the dates and put new dates down and also added details that didn't exist in Exhibit 34.

48 Q. What detail?

A. For example, circuitry that isn't in here, but will probably show up in the next exhibit such as chroma generation as in 23-208. The RF oscillator in 23-204, a secondary flipflop as in 23-206, joy stick amplifiers as in 23-207, and probably an updated schematic of the rifle electronics as in 23-209, as well as the golf putting joy stick

in 23-209; and the 4 1/2 megacycle FM oscillator in 23-210. Also 23-211 shows the code generator which is the small black transistor radio box whose exhibit number escapes me at the moment that we saw last week and that is not part of the original box.

Q. You are referring to Exhibit 31?

A. That is right, sir.

Q. Is it correct that we do not have any document from which you can determine when Exhibit 33 - I am sorry, Exhibit 34 was built?

A. So far we haven't been able to relate it to any dated document, that is right.

Q. Now, you referred to other hardware which you thought was built with the circuitry of Exhibits 23-203 through 23-211, could you find that, please?

A. Yes.

Q. Now, you have produced another model?

A. That is right.

Q. And it has the No. 7 on masking tape?

A. Yes.

MR. WELSH: Could we have the reporter mark this as Exhibit 35?

THE WITNESS: While you are doing that, Mr. Welsh, have the reporter record the rifle which goes with it as the next exhibit number.

MR. WELSH: We can make that Exhibit 35A.

(Whereupon, Exhibit 35 and 35A were marked for identification.)

THE WITNESS: Mr. Welsh, before we go on to this new exhibit, I'd like to - having looked at it now, I would like to correct a statement that I made a minute ago in answer to your question as to whether we can tie the dates of Exhibit 34 and that of any document here together. I think now in retrospect it is clear that what I speculated at a little earlier this morning, that the documents of 23-203 through 211A in the main represent what is inside that exhibit with the exception of those circuits that I called out specifically a minute ago such as the chroma circuits, the revised gun circuits and

the joy stick circuits. So I would say that pretty conclusively dates the chassis of Exhibit 34 prior to the date that is scratched out at the bottom of these documents in Exhibit 23; that is, the January 20, 1969, date. So I guess that box was built during the latter part of '68 and it was ready sometime in January of '69. And, if you give me one other date out of a collection of documents here, I think I can tie this whole thing up. The earliest date of the visitations by the TV manufacturers representatives was when, January of '69? So by '69, we had a demonstration capability which is essentially represented by the next exhibit just put on the table here, Exhibits 35 and 35A, which now pushes back the construction of 34 even further prior to the 1-20-69 date; but we have a series of missing pieces of paper that should have led us to a date sometime in '68 when Exhibit 34 was built because if you take the package in its entirety; that is, Exhibits 23-198 through 211A, you come very close to describing Exhibit 35. And since we began demonstrations with Exhibit 35 in January, 1969, certainly that was built in late

'68 or the latter part of '68, so once more I have got to amend my statement that we haven't tied Exhibit 34 specifically to a date, but it must have been even earlier than the 1-20-69 date, probably sometime in the summer of '68 because it is clearly the predecessor of 35 having the same circuits, but not as many in it.

51 Q. Might any of Mr. Harrison's notebooks cast light upon when the work on these Exhibits 34 and 35 were done?

A. It might. Indeed it does. In Exhibit 25, specifically 25-18A, which is a schematic attached to page 18 of Exhibit 25 - - -

52 Q. Is that dated?

A. It is dated 10-24-68. It is a schematic by Harrison that describes the three spot plus a center barrier or a net generator and the necessary flipflops, controls, hand controls, all of which are part of Exhibit 34.

53 Q. Now, do I understand correctly that that involved digital spot generation versus the saw tooth analogue system?

A. That is right. So at least by October 24, '68, the

circuitry in Exhibit 34 had been built.

54 Q. Now, does that have the RF oscillator on it, Exhibit 25-18A? is that we have here.

A. Yes, it does. Inspecting Exhibit 34 again, I notice the crowbar SCR, silicon control rectifier, physically on the chassis which is shown on 25-18A, the center right-hand edge.

55 Q. Does Exhibit 34, except for the RF oscillator, include all of the circuits of Exhibit 25-18A?

A. Yes, it does.

56 Q. And where was that RF oscillator located in 25-18A?

A. The lower left-hand corner.

57 Q. Does Mr. Harrison's notebook contain any other entries which might cast further light on when Exhibit 34 was built or Exhibit 35?

A. Yes, on page 19 of Exhibit 25, in the lower of the two schematics on that page, there is a reference to a three-positioned rotary switch.

Q. In Harrison's handwriting it reads as follows:

A. "A rotary switch and additional diode gates have been added to make function switching easy and to include handball." And below in the schematic is

shown a multipole three-position rotary switch. And judging from the connections to the switch in Exhibit 34, that is what we have here. Now, with respect to your question as to what Harrison's book shows about Exhibit 35 or what any of the documents show about Exhibit 35, I think the work done on Exhibits 25-22A, 22B, for example, relate to the handball game which requires a second flipflop, the first one being that required to switch both the English pots and the ball, all of which is preparatory to the work involved in creating Exhibit 35 which has all these elements in it.

58 Q. You were referring to Exhibit 25-22A and B?

A. Yes, sir, 22A and 22B.

59 Q. Do those have dates?

A. Yes, 11-8-68 and 11-7-68 for A and B respectively.

60 Q. Now, what is the flipflop circuit that you were referring to in those pages functioned to do?

A. It controls the ball motion in the handball game.

61 Q. In what way?

A. It has the same function as the ball flipflop had when used in conjunction with the ping pong game;

namely, that it is the output of the flipflop as integrated by an RC network which develops a ramp voltage which in turn is used to move the ball spot either from left to right or left to right depending on whether it is a rising ramp or a falling ramp with respect to Vcc.

62 Q. Which of Exhibits 25-22A and B has the date 11-7-68?

A. 22-22A has the date 11-8-68. 25-22B has the date 11-7-68.

63 Q. Now, is a different type of action of the ball obtained with the flipflop circuit of Exhibits 25-22A and B than was obtained previously in the ping pong game?

A. No, the only reason for the second flipflop is that you have to divorce the switching function for the English control from those of the ball control in the handball game. Other than that, the actions are the same.

64 Q. Was the handball game, then, similar to the ping pong game except that you didn't have an English control?

A. ~~Those~~ They both have English controls. The handball game differs from the ping pong game in that a

7 Q. wall is placed either on the left or the right side

of the screen and because ball reversal by intercept with two players on opposite sides of the court as is the case with ping pong doesn't necessarily occur - in fact, doesn't ever occur in the handball game, because both players' spots are on the right-hand side with the wall on the left-hand side, different logic is called for than the case of the ping pong game.

65 Q. Was this circuitry of Exhibits 22A and B incorporated in Exhibit 35?

A. Yes.

66 Q. Is it possible to tell from these exhibits when that circuitry was incorporated into that exhibit?

A. I think it is, Mr. Welsh. Incidentally, in passing, another schematic, Exhibit 9-260 which does have a date, 11-17-68, very definitely represents Exhibit 34. Also, 9-261 which was the original from which 260 had been Xeroxed. It is essentially the schematic of Exhibit 34. Notice, incidentally

A. that the RF oscillator is missing on that drawing. So we know that that box existed prior to 11-17-68. I am afraid I lost your question, Mr. Welsh.

67 Q. I think you answered it and that was whether there

were any other documents that indicated when either of these exhibits was built.

A. No, I didn't answer it with respect to Exhibit 35. I think if we go back to 23-203 through 211A, we can characterize those schematics as essentially representing what was then in Exhibit 35. By then, I mean on 1-20-69.

MR. WELSH: Off the record.

(Discussion off the record.)

68 Q. I am a little bit confused, yet I believe when you first talked about Exhibits 23-203, you thought that the crossed-out date of January 20, 1969, represented the date when certain circuit elements were put into Exhibit 34 and you have now corrected that testimony so that you believe that as of that date of January 20, 1969, the circuit elements shown on Exhibits 23-203 through 23-211A were present in Exhibit 35, is that correct?

A. Yes. More than that, I think the last thing we came across, Mr. Welsh, was the reference to 25-18A dated 10-24-68 which showed essentially what is in Exhibit 34 and I think it ought to put

an end to the search for a dated schematic and Exhibit 34 once and for all.

69 Q. Now, before you surmised that the crossed-out date of 1-20-69 related to Exhibit 34 and that the 8-21-69 related to the later model 35; do I understand correctly that that is no longer true?

A. You are right, that is incorrect. The crossed out date does relate to Exhibit 35 as it existed in January of '69 and so far I don't know what the significance of the August date, the later date is, maybe we will come to that later.

70 Q. That was to be my next question. Now, Exhibits 34 and 35 appear to have been built very close to the same time, why were there two different models built around the same time?

A. To the best of my recollection, we had decided that in order to play the whole series of games which were representative of a cross section of the kinds of things that could be done with hardware that had been developed through the end of '68, we would need a box that was more readily switchable or programmable to go from game to game. Exhibit 34 as you saw a few minutes ago has a three-position

rotary switch on it which is very limiting in terms of how best to make use of circuit elements in creative games and that was the reason for moving into Exhibit 35.

Q. Have you been able to determine why Exhibit 34 does not have an RF oscillator?

A. No, I have not. I suspect that initially it was used to drive a crowbar modulator just as its predecessor piece of hardware that was demonstrated to TelePrompter did.

MR. WELSH: Let's break for lunch at this time.

(Whereupon, the luncheon recess was taken.)

Q. (By Mr. Welsh) Now, we have established that Exhibit 35 was built at least prior to 1-20-69, is it today generally in the same condition as when it was built at that time?

A. Yes, it is, although a few things have been added to it.

Q. Who built Exhibit 35?

A. Mr. Harrison.

74 Q. What things have been added to it since January 20, 1969?

A. A 12-pin connector, it is a Jones Plug, and it has been added to the side of the cabinet sometime after 1-20-69. Into it plugs in another chassis capable of playing such ball games as require the differentiating and integrating circuits - Rusch's design.

75 Q. Is that other chassis in existence?

A. Yes, it is. It is somewhere in this room. There is also a switch mounted on the front edge of the box labeled "lite pen" for its upper position and TV games for its lower position. That wasn't there initially and I don't remember what that switch does; but, other than that, the box seems to be the way it was early in '69 and the way it was all through the demonstrations later in '69.

76 Q. When did you say was the first demonstration?

A. Well, referring to Exhibit 21, the first demonstration was on 14 January, '69, to RCA representatives.

77 Q. Now, were you present at that demonstration?

A. Yes, I was.

78 Q. Who else was present?

A. To the best of my recollection, Mr. Etlinger was present and probably, although I am not certain, Mr. Harrison.

79 Q. Who was present on behalf of RCA?

A. Referring to Exhibit 21-2, Mr. Lance Marshall was present; Mr. William Enders and possibly others, but that is all that this file recalls to mind.

80 Q. Who arranged for the demonstration?

A. I believe Mr. Etlinger did.

81 Q. Who conducted the demonstration?

A. I did.

82 Q. Will you describe the demonstration?

A. Yes, Harrison and I had set up Exhibit 35 connected to an RCA color TV set, the same one we discussed in connection with testimony back in November. We also had the rifle which you labeled Exhibit 35A at the demonstration as well as an attachment that could plug into, I believe, the same connector the rifle plugs and which is essentially a golf ball on the end of a joy stick and also Exhibit 31. In general we had an outline of the games to be played listed on a flip chart which was placed so that everybody could preview what was going to be shown.

And then I proceeded to go through that list step by step demonstrating each game in turn using appropriate overlays where required until we came to the end of the list.

83 Q. Is the list present among the documents which you have produced?

A. Well, the flip chart isn't, but what looks like a very close - very similar listing is contained on 23-199.

84 Q. Did you find something else to indicate what games were shown at the demonstration?

A. Yes, there are ten "programming cards" (in quotes) associated with Exhibit 35 contained in an envelope taped to the lid of Exhibit 35 which were used in conjunction with the slide switches on the front of the unit to set up switch positions indicated by red dots on that program card for each particular game. Those ten programs are identical in number and in description with the listing given in 23-199.

85 Q. There is a separate card for each of the games listed on 23-199?

A. That is right; for example, if you wanted to play

ping pong, you would flip the first and the third switch in the upper row to the down position because two red dots indicated that that was what was supposed to be done; and you would flip the third and sixth switch on the lower row, the sixth switch being called out as a switch that determined the color of the background; in this case, green. So what the switch does is to put the chroma oscillator into the circuit.

86 Q. Now, you refer to a joy stick with a golf ball on it, is that apparatus available?

A. No, it is lost somewhere and I think I can describe it if you would like.

87 Q. Would you do that?

A. Yes, it is merely 2 potentiometers mounted such that one would vary if a control rod emanating from the whole assembly was moved in a vertical ~~position.~~ direction. The other potentiometer would move or rotate only if the control stick was moved in the lateral or horizontal ~~position.~~ direction. So that there were available two voltage outputs proportional to vertical and horizontal direction respectively. A golf ball with a hole drilled into it was prefitted onto the

89 Q.

A. control shaft and projected past the top of a metal box that contained the joy stick and potentiometer arrangement. The whole assembly was meant to be placed on the floor. In fact, we used to hold it down with tape and it was then used to allow an individual to apply a putter to it and effectively putt the ball into the hole.

88 Q. What did the player observe on the screen of the television set?

A. The player observed a ball starting near the bottom edge of the screen tracing a trajectory on the screen - a path - which was in the general direction in which the golf ball was caused to move by the application of the putter and with ~~the~~ a speed somewhat proportional to how hard the golf ball was hit. As the golf ball moved forward on the screen upwards either to the left or the right or straight, it would approach a stationary spot which was meant to indicate the hole in the green. If the ball would indeed come to rest coincident with the hole spot, the latter would disappear indicating that a hole in one had been made.

89 Q. Did you actually demonstrate that game?

A. Yes, we did.

90 Q. Did all of the things that you mentioned actually occur?

A. Yes, they did.

91 Q. The ball movement; that is, the actual ball that was mounted on the joy stick, was limited, I take it, to the movement that the joy stick permitted?

A. Yes, it traveled perhaps a total of four or five inches in an arc.

92 Q. Would you describe what the viewer saw when the checker game was played, or was played during that demonstration?

A. Well, the checker game was a generic category generally involving the movement of two player spots as in quasi checkers. The kind of thing the viewer saw depended upon the overlay. And I think during this demonstration and subsequent ones, we restricted ourselves to the game that we at that time at least I believe called even-odd. This game basically used an overlay which was a mathematical maze which required the players to move from their starting positions towards their final positions in accordance to some arithmetic rules.

93 Q. And what happened?

A. Well, someone won. Nothing happened except that the players would move their spots one square at a time methodically either horizontally or vertically in accordance with the rules until someone won.

94 Q. Did winning involve any coincidence of the players?

A. No, it did not.

95 Q. Was that checker game similar to the one that had been demonstrated with previous equipment?

MR. WILLIAMS: If you know, Mr. Baer.

THE WITNESS: Probably.

96 Q. How about chase games; at that demonstration, what did they consist of?

A. The chase game was, I think, done against an overlay that had simulated obstacles in the form of black rectangles or squares and the object here was for one of the players to attempt to catch up with the other player. The players would be respectively manipulated by two people and the game would end if the player actually caught up with the other player who was being chased. Coincidence resulting

in the disappearance of the chased symbol from the screen.

97 Q. Now, that type of demonstration occurred at the TelePrompter meetings, did it not?

A. Yes, it did.

98 Q. What about the ping pong game at that RCA demonstration on January 14, 1969?

A. The ping pong game was played without overlay. It was played with two player spots plus a ball spot and a central line, vertical line simulating the net presented in video on the screen. And the game was played with the two control boxes which were attached through cables to Exhibit 35 and which have all the provisions for horizontal and vertical control of the player spots and the English control which determines the vertical position of the ball during its flight to the opponent's side and also contains a knob for serving or resetting the game after the ball is out of play because one of the players failed to intercept it.

99 Q. And I believe that is a feature which was not present in the game that was demonstrated to

TelePrompter?

MR. ~~WELSH:~~ WILLIAMS If you recall.

THE WITNESS: No, I am not sure. We identified one button which I think we identified as a serve button, but there were not two individual serve buttons on the TelePrompter controls. Outside of that, I would say the game was identical with one other exception, the presence of the line in the center. The net line in the center, that was new to this box and didn't exist on the TelePrompter demonstration box.

100 Q. You say the game was identical, do you mean in appearance?

A. In appearance and the way it was played and the function of the controls and the way the ball responded.

101 Q. The circuitry was different?

A. The circuitry was different, but its function was identical.

102 Q. In the ping pong game as demonstrated to RCA in January, 1969, did the ball bounce or rebound off of anything other than the player images?

A. No, it didn't.

103 Q. Would you describe the hockey game that was demonstrated to RCA?

A. Yes, the hockey game was essentially identical to ping pong with the exception of the centerline which was not shown during the hockey game. That is, the net line was eliminated and a different overlay was used indicating goals at the end. The object being to get the ball through these overlay goals in order to affect a score.

104 Q. But there were no other images that were not present during the ping pong game?

A. No, there weren't.

105 Q. Ball movement was the same as in the ping pong game?

A. Yes, it was basically the same game.

106 Q. How about the volleyball game, what did that consist of?

A. Volleyball had the following symbology on the screen, two player spots, a ball spot and a half height vertical line in the center. The intention was to play a game with a side view or a profile, if you will, with a half height line designating the side view of the net extending from the ground

A. upward. The object was to play the ball over that

net without touching the net and with an attempt to curve the ball down behind the net towards the ground in such a way to make it difficult for the opponent to reciprocate the ball and get it back up over the net without hitting the net. If the ball hit the net, that would be registered in the circuitry as coincidence and the ball would disappear.

107 Q. Can you point to any of the circuit diagrams which shows the circuitry for generating the symbol of the net?

(Discussion off the record.)

THE WITNESS: The first appearance of that net generator, whether it is for ping pong or volleyball, appears on 9-253 at the bottom of the page. In the case of the original, it is in red ink and it shows a spot generator that consists merely of the horizontal portion of a normal spot generator. It puts out a very narrow line.

108 Q. That is the portion of the circuitry in the center at the bottom between the two diodes?

A. Yes, down near the bottom center of the page. That

is the net generator. Now, for the moment, as far as Exhibit 35 is concerned, the only schematic I have come across is 23-226 which shows the net generator as one of the four spot generators listed on this fold-out schematic.

109 Q. That is for Exhibit 35?

A. That is correct. Now, my only problem is showing that that was already in the box in January for the demonstrations.

110 Q. Does Exhibit 23-226 have any date?

A. Yes, it is a reprint and merely has a stamp on it when it was reproduced in 1971 and that doesn't relate to the date of the drawing.

111 Q. Now, where on that drawing is the net generator?

A. In the second row, if you will, under the No. 6 at the top edge of the drawing are three spot generators and to the right under 4 and 5 is another spot generator. The one under 4 and 5 is the ball spot generator. No, I am wrong, it is one of the player spot generators, I am sorry, I must correct it again, it is the ball generator seeing it is shown interfaced with the English controls below that. Therefore, one of the three

spot generators under 6 is the net - the wall or volleyball net generator. Which one it is, I can only determine by going through this whole switching mess down at the bottom right of the schematic because they are all identical. No, I am wrong, the bottom one of the three has provisions for lengthening or shortening the height of the spot, so that ties it down as the net and the wall spot for handball which we haven't come to yet. The ping pong net and the volleyball net spot generator.

112 Q. And what is that provision for lengthening the line?

A. That provision is for changing the height of the vertical line with respect to the bottom of the display. That is actually the time delay after which the line begins to appear so that if you wanted to draw a volleyball net, it would only begin in the middle of the screen and continue down to the bottom. That is the switching for the vertical portion and then there is switching for horizontal that moves the spot from the center to the left to form the handball wall instead of the tennis net.

113 Q. Where is that switch that you just talked about?

A. If you look at the line terminating in the circle and labeled S9D1 just above that circle, that is the point of entry for a voltage that determines the horizontal position of the wall.

114 Q. And where is the point for determining the vertical height of the wall?

A. It will take a little time to find out how that was done. Oh, yes, if the outputs from the two final transistors in the spot generator; that is, the one that terminates in S1B2 and the one that terminates S1B1; that is, if they are Collector Or'ed, then the lower portion provides the blanking for the upper half and therefore produces the volleyball wall. If they are not Collector Or'ed, the tennis line shows at the center of the screen.

115 Q. Well, what determines whether they are Collector Or'ed or not Collector Or'ed?

A. Setting up of the programming switches up front in conjunction with the program cards that we discussed earlier.

116 Q. And those were the cards located in the envelope in

A. the inside cover of the box of Exhibit 35?

A. That is correct.

117 Q. Do those programming switches also activate the circuits for determining coincidence of the ball impinging with the volleyball net?

A. Yes, except for those situations where coincidence always occurs and I don't know whether that is the case here.

118 Q. Was I understood, where there was a tennis net with a vertical line throughout the center, there was no detection of coincidence of the ball with that net?

A. You are right, so the switching provided for selectively reorganizing coincidence between the ball and the net in the case of volleyball, but not in the case of tennis or ping pong.

119 Q. Who drew Exhibit 23-226?

A. Mr. Harrison.

120 Q. Whose idea was it to provide the programming switches?

A. I don't remember.

121 Q. Who designed the circuitry using the program switches?

A. Well, I wouldn't call it design, Mr. Welsh, it is

simply a matter of connecting up circuits that were already known via switches in such a way that you could go readily from one interconnection to another. It doesn't involve much design work.

122 Q. Is there any other circuit diagram that shows the programming switches such as they are shown on Exhibit 23-226?

A. To begin with, there is another print, 23-227, which is a block diagram of what is on 23-226. At least it appears to be one. Yes, I am looking at 9-281 which is a schematic done by Mr. Harrison labeled in the lower left-hand corner, TV game 1-20-69, W. L. Harrison. That certainly describes Exhibit 35 at least as it was before some of the penciled entries were made or perhaps those penciled entries were corrections. No, if you ignore the pencil entries which probably don't show on your reproduction as additions, maybe they do, the material that is underneath represents the original schematic of January 20, '69, which, as I said,

Q. reflects what was in the box in Exhibit 35 at the

A. time. Does that answer your question?

123 Q. Yes, I just wondered, you were looking at another

drawing and I wondered if that had any bearing on it.

A. Not at the moment. I am just hoping that we will find the original for this some place, but it doesn't seem to be here.

124 Q. That is the original for - - -

A. The original for 9-281.

125 Q. That is 9-290?

A. Yes, it is 9-290.

126 Q. Can you identify 9-290?

A. 9-290 appears to have been the original from which Exhibit 9-281 was made prior to the deletion of some material in the lower left-hand corner of 290 and the substitution in place of it of other material, but I would like to say that I am guessing and the order might have been just reversed. If you will notice, the lower left-hand corner of those two drawings describes two different types of electronics, one has the rifle electronics and the golf putting joy stick schematics shown.

127 Q. And with a date also of 1-20-69?

A. Yes. On the other hand, whereas 9-290 appears to be the original from which 281 was made and it

has in the same general area, in the lower left-hand side, the code generator which was not in the

A. box in January of '69. So what appears to have happened is that the original schematic was in the lower left-hand corner and was erased and the new circuit put on it and I can't find the erasure marks, Mr. Welsh, so I can't explain it. Somewhere along the line, the original might have been printed up into a sepia with the lower left-hand corner blanked out and then the sepia might have had the rifle electronics and the golf putting joy stick added to it so that it would constitute a new original and that certainly is what it looks like on 9-291 where the rifle electronics and golf putting has been added.

128 Q. You mean nemoved?

A. Well, no, I am sorry if I confused the issue here, but there are evidently several generations of originals, sepias with corrections involved, and I am at a loss at the moment to get the sequence straight. I don't know if it is necessary to

Q. play detective here.

129 Q. Well, I am just trying to determine if there is a

circuit diagram that shows what was in the box at that time.

A. I believe I already testified that 9-281 describes it because it has all the elements of that box.

130 Q. But that had changes on it, did it not, the original of 9-281 - I mean, the actual exhibit itself shows penciled changes?

A. Yes, but I think I can explain those. They had to do with building in the code generator that is shown on 9-290 in the lower left-hand corner sometime later. Certainly long after the demonstrations to RCA and others. What we in effect did, and I don't remember why, was to build in the equivalent of the circuitry that is now in Exhibit 31 into this box, and I don't recall why we did it, but it all happened long after Exhibit 35 was demonstrated to RCA. I am quite certain I am correct in stating that 9-281 represents, prior to the hand pencil entries on the lower right-hand side, represents the contents of Exhibit 35 at the time it was demonstrated to RCA.

131 Q. Now, does Exhibit 9-281 also include the circuitry for detecting coincidence between the net generator

for volleyball and the ball image?

A. Yes, it does.

132 Q. Does that also appear on 9-290?

A. 9-290?

133 Q. Yes.

A. Yes, it does, it is identical.

134 Q. It might be a little easier to read, is it the same circuitry?

A. Yes, it is identical. It is the diode gating structure to the right of center near the bottom of the page.

135 Q. In the section entitled flipflop gaming matrix?

A. No, the word is gating matrix.

136 Q. Gating matrix?

A. Yes, that is correct.

137 Q. Do the portions of that circuit which relate specifically to the coincidence of that volleyball net and the ball have any identifying marks so we can tell which ones they are?

A. If you will give me a minute, I will trace it. Yes, sir, if you trace the output from what is called the wall barrier generator to the lowest one of the three-spot generators over to the center

of the sheet, you will find that it drives the cathode of a 1N270 diode which joins two other diodes whose anode joins two other diodes, and also a 5.1K resistor. If you look at the diode immediately above the diode coming from the wall barrier generator, you can trace that right back to S3A3 which is the output of the ball generator to the right of center near the top of the sheet. So that is the diode matrix junction that senses a coincidence between ball and wall and sends that signal on to some other part of the circuit.

138 Q. The output of the wall barrier generator is S1B3?

A. Yes, S1B3.

139 Q. You say the ball is caused to disappear or did it disappear when it coincided with the net?

A. Yes, it did.

140 Q. Could you tell us how that was done?

A. I am studying the schematic to see if I can figure that out. Yes, it is done by pulling down to ground with the SCR, the terminal called S1A2, the upper right-hand corner of the ball generator schematic

Q. near the top of your S1A2, the top of your

A. schematic.

141 Q. How does the signal get to there from the matrix?

A. It doesn't. S1A2 is tied to the collector of a crowbar SCR shown in the lower right-hand corner of the schematic. Terminal S2D2, and if you follow all the switching on here, you will find that in the volleyball mode, the switches on the front of the instrument connect S2D2 to S1A1 which is the junction of two resistors, a 2K and a 10K resistor. When this junction is pulled down to ground, voltage disappears from the output stages of the spot generator and it effectively blanks the ball spot. The 2K resistor prevents the SCR from being shorted.

142 Q. Now, would you look at the program switch cards which were in the cover of the box and select the one for volleyball and tell us which switches were to be activated for playing that game?

A. The third switch in the upper row and the fifth switch, as well as the second switch and the fifth switch in the bottom row.

143 Q. Third and fifth in the top?

A. Yes, and second and fifth in the lower row.

144 Q. Now, can those switches be identified in Exhibit 9-290?

A. They certainly can, given enough time.

A. Yes, but they also (Discussion off the record.)

If you trace the connection from the ball generator labeled S1A2 to the switches by going to S1, the left-hand-most one of the switches, and visualize that being connected to the terminal called 2, which is the upper terminal which the arm is making contact on the paper, on the schematic of 9-290, and realizing that that switch was not depressed and therefore in the same condition as is shown on the schematic, you can trace S1A2 via the arm of the switch over to S5A3 which is shown open. But switch 5 we already noted before is closed in the volleyball condition, so we continue from A3 - - - S5A3 through the arm down to S2D2, the bottom one. And S2D2 you will notice is connected to the anode SCR which

A. also is labeled S2D2. So any time that is fired, it will ~~follow~~ pull the spot of those two generators down to ground and wipe out the spot.

145 Q. Now, that took care of the switch, the fifth switch in the upper row, perhaps you could answer this generally, do the other switches simply activate the wall barrier generator to provide the volleyball net mode versus the ping pong net?

A. Yes, but they also provide for some of the changes in the interconnection of the gating matrix so that the right things get gated together to actuate the corresponding elements depending upon the game being played.

Q. Now, are the switches in the lower row of switches on Exhibit 35 shown on Exhibit 9-290?

A. I don't understand the question, Mr. Welsh.

Q. Well, I understood that each of the switches in the upper row was a four-pole double throw switch. That is, in the upper row on the actual model, Exhibit 35; and the switches that are shown in Exhibit 9-290, in the lowerright-hand portion, are only the upper row of switches of Exhibit 35, are they not?

A. I don't think so. We have switches labeled up through S12, so that takes into account the top row which goes from 1 through 8 and the next four switches on the bottom row and I think that that is all that was used in the box, Exhibit 35, at the time of its demonstration. Although the physical switches might have been there at the time, they simply weren't wired in.

148 Q. Going on with the games that were demonstrated to RCA, the next one is checkers with obstacle, of what did that game consist?

A. That is my problem, trying to remember that. If I recall correctly, it meant the standard checker game, but with the addition of the volleyball half height centerline which as the word implies, posed an obstacle to the checkers over the playing surface so it forced another discipline into the game; namely, the avoidance of that line.

149 Q. Did anything happen if either player touched the line?

A. I don't think so. I seem to recall that we had game rules that called for that - I am sorry, I was going to say that called for that volleyball line to be there or not to be there depending on the rules of the game, but obviously from what we are looking at here, that line was there in the checker with obstacle position, so I am pretty sure that you will find that checkers and checkers with obstacles have the same switch positions except for the one that puts the volleyball line in.

150 Q. There were just two player images and no ball image, is that right?

A. That is right. Well, I can't reconstruct that right now; I don't know whether it was the volleyball or what, but I am pretty sure it was the volleyball line that got switched in.

151 Q. Could you describe the handball game as it was demonstrated to us?

A. Certainly. The handball game consisted of two players and a ball spot and a vertical wall extending from top to bottom on the screen at the left-hand edge of the screen. The object was to bounce the ball off this vertical wall on the left-hand side and to attempt to keep it in motion until an opportunity presented itself to slip it by the opponent and caused the opponent to miss it. In addition, the logic was so arranged that as long as you touched the ball and bounced it repeatedly off the wall, you retained English control; that is, vertical positioning control over the ball. It was not until after the other player, the opponent would intercept the ball, that English control would revert to him.

152 Q. Then both player images were located on the same side of the wall?

A. Well, since the entire screen was to the right of the wall, both players could be in place on the screen to the right of the wall which was on the extreme left. Well, not the extreme left, but somewhere near the left so that it could be adjusted by some control so it would be within view regardless of the display devices, ~~on~~ or the screen ~~of~~ over — expansion, or whatever.

153 Q. Do I understand correctly that the English control passed alternately from one player to the other?

A. It passed from one player to the other whenever a player intercepted the ball with his player spot.

154 Q. Then he obtained the English control?

A. That is correct.

155 Q. And what happened if a player missed the ball?

A. Well, it would go out of play on the right-hand side of the screen.

156 Q. And then was there a reset to bring the ball back into play?

A. Yes, the same reset knob, either one or both, I don't recall, of the control boxes could reinsert

the ball.

(Whereupon, a recess was taken.)

157 Q. Would you please describe the target-shooting game as it was demonstrated to RCA in January, 1969?

A. In the target-shooting game, accessory Exhibit 35A, which consists of a toy rifle, the electronics shown in the left center of 9-281 was plugged into the back of the game box Exhibit 35. A spot, I believe one of the player spots - maybe the ball spot, I am not sure - appears on screen as a target spot. As either stationary or moving. When the rifle is more or less aimed at that spot, an image of the spot illuminates the photocell within the rifle barrel, changes its resistance; and through the circuitry which follows the photocell, outputs a logic 1 signal which if anded at the same time with the output from the trigger switch produces a logic level output signal which in turn reaches into the unit and crowbars the spot, the target spot. That is, makes it disappear from the screen.

158 Q. You say just one spot is used in that game?

A. Not always. Well, I will have to make this proviso, if not at this point, sometime later we also used the ball spot as a target spot and allowed it to reciprocate between two player spots. So you would have a moving target on the screen automatically reciprocating. And those things, I don't know whether it was done yet. It was just a question of establishing the ping pong mode and adding the rifle so that the rifle energizes the crowbar just the way we discussed it here a few minutes ago and blanked the ball spot.

159 Q. And the target-shooting mode was rendered active by throwing predetermined switches on the front of the box of Exhibit 35?

A. That is right.

160 Q. Next is the pumping game?

A. Right. The pumping game is one in which a single spot appears at the center of the screen. Its vertical position is controlled by the output from two circuits. One of the circuits is energized by one player, the other circuit being energized by the other player. The circuits were simply

pushbuttons in this case, the serve buttons served the dual purpose; several resistors and a capacitor. The action was such that when the pushbutton was depressed repeatedly, it would charge up the capacitor which incidentally is shown in the bottom right-hand corner of 9-281. That charge would be proportional to how fast, how often per unit time you depressed the pushbutton and subsequently that charge was applied to the vertical positioning input of the spot being shown on the screen. If you look at 9-281, you will notice that the two capacitors are shown in association with pushbutton switches of opposite polarity with respect to ground which brings to mind again how it worked. One of the players generated an increasingly negative voltage as he pumped it and the other player produced a positive voltage, in the opposite direction. That sum was applied to the vertical position of the spot generator which then moved up or down depending on who pumped most rapidly and generated the highest voltage.

Q. Did you use an overlay?

A. Yes, we had an overlay which denoted the side view

of an elevator shaft and we showed various levels, floors, if you will, and started off the elevator at the central floor and made the objective of the game to have one player try to get the elevator down to the ground floor and the opponent trying to get the elevator to the top floor; and whoever got the elevator to its preferred location was the winner.

Q. The final game on this list, Exhibit 23-199 was the golf game.

A. Well, the golf game I believe we already went through a description of that earlier when you asked me to describe the golf putting joy stick and what it was that appeared on the screen; do you wish to redo it?

A. No, I just wanted to confirm that that was true, if it was. Do I understand correctly, then, that you had one image as the hole?

A. Yes.

Q. And another image as the ball?

A. Yes, sir.

Q. And if the player moved the joy stick properly, that the ball image would appear to reach and coincide

with the hole image?

A. That is correct.

165 Q. And the ball would disappear?

A. I forget whether the ball disappeared or the hole disappeared upon coincidence, probably the ball.

166 Q. Which of the player and the ball generating circuits was used to generate the ball image?

A. Well, the ball was the same ball that we looked at before, labeled dot generator No. 3 at the top right. The hole I am pretty certain was put on screen by dot generator No. 2, the second one down.

167 Q. Now, did this apparatus as represented by Exhibit 35 and the drawings you have been referring to, particularly 9-281 and 9-290, does that apparatus have any relation to the application for patent which was originally the 285 patent in which you, Mr. Harrison and Mr. Rusch were named as inventors?

A. Yes, certainly.

168 Q. What relation did it have, and here is a copy of the patent?

A. Well, among other things, the concept and associated circuitry with such things as coincidence between

a ball and a player's symbol which I think the patent defines as hit and hitting symbols, reappear in this patent. Essentially the same circuits as those in the schematics of 9-281 and 9-290 as far as the spot generators are concerned, reappear in the patent and on and on it goes.

169 Q. In other words, Exhibit 35 is the physical embodiment of the apparatus shown in the 285 patent which was reissued as No. 28,598?

MR. WILLIAMS: Well, I object, there are a number of different apparatuses shown in that patent. I don't know that Mr. Baer should be asked to make any kind of a comparison between everything that is in the patent and Exhibit 35.

THE WITNESS: That is right, that wouldn't be a correct statement.

170 Q. Well, could you tell us what parts of Exhibit 35 are present in the patent?

A. Well, without checking through carefully, I would say all those parts pertaining to Figures 1 through 17. Then again Figure 21, Figure 20B.

171 Q. Then do I understand correctly that the parts that are shown in Figures 1 through 17, 20B and 21 were

present in Exhibit 35 as it was constructed at the demonstration for RCA in January, 1969?

MR. WILLIAMS: I object to the question, that is a mischaracterization of his testimony as I understood it. I think he phrased his answer with the phrase without checking carefully.

172 Q. Well, were you able to tell, to the extent that you checked, that the parts in Figures 1 through 17, 20B and 21 were present in the apparatus represented as Exhibit 35?

A. Well, as I said, Mr. Welsh, they appear to be essentially similar to what is in Exhibit 35.

173 Q. And what parts are not - I realize it is the parts that are in the other figures, is that correct?

A. That is right.

174 Q. In other words, the parts in the other figures than those that were just listed are not present in Exhibit 35?

A. That is right.

175 Q. Would you tell us what those parts are?

176 A. I would have to look at them one by one. Starting

with 18A and B, that is a circuit for generating odd-shaped symbols on the screen such as doughnuts or star-shaped symbols; and 18B shows a wave form that explains how some of these shapes come about. Figure 19A is a block diagram of the circuitry required for playing games that involve differentiating and integrating the player and ball motions to produce the resultant ball motion that is proportional to velocity and direction of the player at the moment of impact. Figure 19C is a detail on what came to be called the gated differentiator circuit for those types of games. Figure 19B shows a vector diagram which indicates some of the directional vectors that had to be resolved. Voltage vectors that had to be resolved and generated for producing the desired motion of the ball. Figure 19D shows adjacent parts of the circuit action in which the result of the differentiation of various wave forms is finally gated and integrated and eventually results in a voltage ramp being generated which produces the desired ball spot. Figure 20A is applicable to Box 35.

176 Q. It was?

A. I am sorry, I omitted that the first trip around. Figure 20A is applicable to Box 35. It is simply a generic block diagram of a game capable of being played. I suppose without further reading, a checker game with obstacles.

177 Q. What figure are you referring to now?

A. 20A.

178 Q. Well, the drawing description of Figure 20A states that it is a diagram of electronic apparatus for a simulated race game; was that the same as checkers with obstacles?

A. I don't know offhand, I would have to read it carefully to determine that. I'd say it is essentially the same as checkers except that I would have to infer that in checkers with obstacles, that if you did hit the obstacle with one of the checkers, the checker or the player would disappear

Q. and when you asked me that question before, I said I didn't think anything happened, there was no coincidence. I don't know which is right without looking at all the details. The elements are in the machine for doing it either way and whether we thought it was a good game and hooked

it up that way, this is a detail which we can only find out by looking. I don't know whether there was wipe-out or not, but, in any event, what is in Figure 20A, it could easily be done by box Exhibit 35. At least with respect to one obstacle.

179 Q. Well, then, do I understand correctly whereas you at first thought that the circuitry of Exhibit 20A was embodied in Exhibit 35, that is Figure 20A of the reissue patent 28,598; you now do not recall whether that in fact was in Exhibit 35?

A. No, I do not. If it is important, we can trace the circuit again.

180 Q. Well, I would like to know what was incorporated in Exhibit 35 that is also described in the reissue patent 28,598?

A. In that case, I will have to trace the circuit again.

181 Q. Perhaps it might help, Mr. Baer, referring to Column 20 of the reissue patent 28,598, there is a description of Figure 20B in which it is stated, "the size of the displayed dots will be dependent upon the control signal inputs; that is, the positioning inputs, against the size of the displayed

dots will be dependent upon where upon the screen they are displayed." Then down at the same column, line 42 it says, "Figure 20A is a block diagram of the system for carrying out the race-type game of Fig. 20C, a pair of dot generators 261 and 262, generate video signals which are coupled to a television receiver to display 263 through 265. These generators are constructed in the modified form in Figure 20B whereby the size of the dot is dependent upon the positioning control signal applied to the generators." Now, Mr. Baer, in Exhibit 35 up to this point there has been no consideration, has there, of generation of any dots in which the size of the dots is dependent upon the control positioning signal inputs?

A. That is correct.

Q. Therefore, is it not also correct that the circuitry of Exhibits 20A and 20B of the reissue patent 28,598 was not present in Exhibit 35 when it was demonstrated to RCA?

A. That is right.

Q. Now, when you first noted the parts or the figures of the reissue patent 28,598 which showed parts in

Model Exhibit 35, you indicated 1 through 17, Figure 21 and Figure 20A and 20B. Now, you have just agreed that the part of Figures 20A and 20B of the patent were not in Exhibit 35?

A. Yes, sir.

184 Q. How about the circuitry of Figure 21?

A. Figure 21 refers to the game of gun ping pong, I believe, and I would have to reread the accompanying text to make sure.

185 Q. The description of Figure 21, Column 4, is that it is a diagram of electronic apparatus for a left-right shooting game.

A. Yes, which we later came to call gun ping pong or rifle ping pong. The game which the block diagram of Figure 21 indicates is not included in the box Exhibit 35.

186 Q. So that leaves, then, just Figures 1 through 17 that represent parts that were in Exhibit 35?

A. And Figure 20B, did you mention that, Mr. Welsh?

187 Q. Yes. You already said parts Figures 18A and B, 19A, B, C and D; 20A and B were not in Exhibit 35 and now you stated the game of Figure 21 is not in Exhibit 35. I think that leaves just the

Figures 1 through 17.

A. That is right.

188 Q. Now, you were the sole inventor, were you not, of Exhibit 10 which is the 280 patent?

A. Yes, sir.

189 Q. What did you yourself consider at the time you thought of the apparatus disclosed in that patent to be new?

MR. WILLIAMS: Well, I object to the question. There are a lot of different apparatus disclosed in that patent and I assume that he must have thought of them at different times and I don't think he can answer that question as to what he thought at different times and you haven't established any foundation that he has any recollection of what he thought of at that time or those times.

THE WITNESS: Besides, Mr. Welsh, I think we have been through every one of the elements that are in here in the course of my testimony. I think you essentially asked all those questions once before. We went through every last one of these.

190 Q. Taking it as of the time the application was filed, did you think that you had developed something new?

A. Certainly.

191 Q. And what specifically did you think at that time you had developed that was new?

MR. WILLIAMS: If you recall, Mr. Baer.

THE WITNESS: Well, first of all, when was the filing date?

192 Q. The filing date of the original application was January 15, 1968.

MR. WILLIAMS: Mr. Baer, he is asking for your recollection, not your surmise.

THE WITNESS: Well, how can I separate surmise and recollection at this late date? He has the evidence of what we applied for in the form of issued patents in front of him. How can I answer except to say what was in the patent is what I invented.

193 Q. Well, you certainly have had occasion to consider what you did, whether you did something new. You said, yes, you certainly developed something new;

I am asking you now to tell us what you as the person named as inventor in the 480 patent think you did that was new?

MR. WILLIAMS: That is a different question than you asked a few minutes ago. The first question was what he thought was new at the time of the original filing date of the patent application for the 480 patent and now, as I understand, the question is what he thinks or what he presently thinks he developed that was new.

THE WITNESS: Mr. Welsh, I believe you asked me what I thought was new at the time of the initial filing in January of 1968. In general, to the best of my recollection, what I thought was new was the creation of games playable on a raster scan TV type display in which one or more players, participants, could manipulate symbology on the screen through the manipulation of controls in such a way as to affect a variety of games. To the best of my recollection, I also conceived of the application of photoelectric detectors to the game of target shooting in which

the target is a stationary or moving symbol on the raster scan display. And I believe, without priming my memory by going back into 480, that the recognition of coincidence between two symbols co-located on the screen with some resultant indication or change in the game as a result of that co-location was also one of the features I envisioned. I also believe that the concept of playing games in cooperation with an incoming television or cable television transmission and the method for doing that; namely, the technique of crowbarring the antenna terminals and the extraction of synchronization signals from the TV set or raster scan display without reaching into its circuitry, was a part of my initial invention.

MR. WELSH: Could I have that answer, back, please?

(Whereupon, the previous answer was read back by the reporter.)

Q. Now, was what you just described what you today think you thought to be your invention at the time the

application was filed in January, 1968?

A. Yes.

195 Q. You used the term raster scan type TV display and stated that what you thought was new was creation of games playable on a raster scan TV type display; did you contemplate that terminology back in January of 1968 or did you really then just think of playing games on a TV set?

MR. WILLIAMS: Again, Mr. Baer, if you recall.

THE WITNESS: Well, I think we have been over that facet of what I thought I was doing at a much earlier time in the deposition and I guess I can only say that I simply don't recollect, certainly, at this point exactly what was on my mind.

196 Q. Well, did you then use the term raster scan TV type display when you were speaking of television sets?

A. I may or may not have.

197 Q. Wouldn't the basis of your idea be to find some use for standard television receivers which were so widely located in homes?

A. Yes, certainly, that was one of the primary motivations.

198 Q. So didn't you think in terms of the TV sets rather than raster scan type displays?

A. Well, again I would like to say, as far as I am concerned, they are synonymous.

199 Q. Well, even if you think they are synonymous today, the question is at that time did you not think in terms of TV receivers rather than raster scan type or TV type displays?

A. It is probably true at least at the very beginning back in '66.

200 Q. You prepared an invention disclosure form, did you not, in connection with the application for the 480 patent?

A. I must have, it is customary.

(Discussion off the record.)

MR. WELSH: I'd like to ask the reporter to mark as Exhibits 36-1 and 36-2 and 36-3 the three copies of this document which Mr. Williams just removed from the file marked D-2401 which appears to be the file of application

in the name of Ralph H. Baer, Serial No. 697798, filed January 15, 1968, for television gaming and training apparatus. And as Exhibit 37-1, 37-2 and 37-3, another document entitled "Patent Disclosure Sheet" taken from the same file, the first three-page document contains dates in 1967 and the last one, Exhibit 37-1, 2 and 3 contains the date 5 January, '68.

(Whereupon, Exhibits 36-1, 2 and 3 and 37-1, 2 and 3 were marked for identification.)

201 Q. You have been handed Exhibit 36-1, 2 and 3, Mr. Baer, have you seen that document before?

A. Yes, I have.

202 Q. Could you identify the document, please?

A. Yes.

203 Q. What is it?

A. It is a Xerox copy of a patent disclosure sheet filled out in my handwriting that I made myself.

204 Q. When did you fill that out? I might direct your attention to pages 2 and 3 where there appears to be a date after your name?

A. June 16, 1967.

205 Q. Now, is that your signature at the bottom of each page on the right?

A. Yes, it is.

206 Q. And did you prepare pages 36-2 and 36-3 on June 16, 1967?

A. Yes.

207 Q. Did you also prepare page 36-1 on the same day?

A. It would appear that way.

208 Q. Do any other signatures appear on these pages?

A. Yes, there are two signatures of two witnesses, Mr. Robert Solomon and Mr. Herbert Campman signed all three pages.

209 Q. And did you see them sign those pages?

A. Yes, at least I believe I did because I make it a practice.

210 Q. Did they sign them on the dates indicated there?

A. Yes.

211 Q. And that is June 26 for Mr. Solomon and June 27, 1967, for Mr. Campman, is that correct?

A. That is correct.

212 Q. What are these or what is this document?

A. It is a patent disclosure sheet which is standard

at least at that time, this particular form was a standard form for submitting inventions to the patent office at Sanders Associates.

213 Q. Was it a normal procedure at Sanders Associates at that time to prepare such a document for each development that was to become the subject of a patent application?

MR. WILLIAMS: If you know, Mr. Baer.

THE WITNESS: The answer is yes.

214 Q. And was it a part of that procedure that such a disclosure sheet would contain information regarding the development that was to be the subject of the patent application?

A. That is right.

215 Q. What information in that regard was to be put on such a sheet?

A. Well, the first sheet in particular clearly outlines what is required because it calls for specific information by means of preprinted lead questions.

216 Q. And more specifically could you tell us what that

221 was supposed to include?

MR. WILLIAMS: Well, I object to the question. You have established no foundation that Mr. Baer knew what was supposed to be included on this sheet. Certainly he knows what he thought

A. was supposed to be included if he recalls that, but what somebody else thought was to be included, we have no way of knowing whether Mr. Baer knows.

217 Q. Well, you prepared these sheets, you said, what did you think was to be included?

A. Well, my interpretation of what is required for patent submittal is to respond to each one of the items here as I understand them, which is what I did.

218 Q. And did that include responding with information that you knew about at the time you prepared the document?

A. Yes.

219 Q. It was supposed to be facts that you knew about the subject matter, isn't that true?

A. Certainly.

220 Q. At that time?

A. Well, if you call a concept a fact, then I agree.

221 Q. Now, being more specific, could you go down the all

first page of Exhibit 36-1 and tell us what information was called for there and what information you gave? I'd like to ask you to quote it because it may be difficult to read the handwriting.

A. The first item calls for a descriptive title which I entered as TV gaming. The second item under A, 2A, calls for problems solved; which I responded to as follows: "Allow use of standard black-and-white or color TV set for display of symbology - - -"The word "to" is missing -" To permit active man-machine dialogue for gaming and related purposes." Under 2B, the preprinted question is how it is solved; and my entry is, "Simple electronic circuitry is employed to generate symbology in a format compatible with standard TV sets. Simple data entry devices such as potentiometers, joy sticks, photocell devices, switches, etc., are employed."

Q. Now, if we stop for a moment there, does that represent what you thought to be what was new in your TV gaming concept at that time?

MR. WILLIAMS: Again, Mr. Baer, only answer the question, if you recall.

THE WITNESS: How can I recall

specifically what I thought was new, but I can certainly answer that that is not what I thought was new. That is a descriptive title in response to a preprinted question of what was the problem that was solved or how it is solved. What elements are new in providing the solution aren't necessarily in these words here and I don't think, although the form might have intended to elicit that kind of detail, it is impossible to stick it into three lines and that is why you find appendages.

Q. Could you go on?

A. Under Item 3, the preprinted part says attached heretofore preprinted information the detailed description form. And under that I entered in my own handwriting, "See complete set of initial notes, complete notebook chronological record and other data." Under Item 4 the question is the idea of the invention was suggested by the following factors. In my own handwriting, "The availability of standard TV sets to the majority of the population and the attendant possibilities resulting from the general availability of a device allowing the viewer to play games or otherwise communicate with

his TV set. Below that is the date March, '66, and then place is preprinted and in my handwriting again, "Home of inventor."

224 Q. Is something crossed out after the printed word date and before March, '66?

A. Yes.

225 Q. Can you tell what that is from the exhibit?

A. It looks like Sept. is crossed out.

226 Q. Do you recall entering that date or crossing it out?

A. No, I do not.

227 Q. Could you go on, please?

A. Under Item 5 the form reads as follows: "The idea of the complete apparatus," etc., became clear on; and in my handwriting," "March/April, 1966." Under Item 6, apparatus construction completed on; and in my handwriting, "January 10, '67." Preprinted began experimentally in use at; and in my handwriting, "SAN," which stands for Sanders Nashua," 6th Floor, Secure Lab." Item 7, preprinted, is commercial use contemplated. My response is "yes." Then explain. My answer, "Invention intended

A. primarily for large-scale use by general public and

secondarily for scientific, educational or clinical or other applications."

Q. I believe that is and other instead of or other.

A. I am sorry, and other applications. Item 8, preprinted, the invention has been or will be described in publications or reports as follows: my handwriting, "see Item 3 above." Item 9 asks whether the invention was made during timecharged to government contract, and my response is, "No." Item 9B asks whether the invention was embodied in material to be furnished to the government. My answer is "No." Finally 9C asks if the answer to 9D is no, was the invention needed to perform work required by the contract. My answer is "No." Item 10 on the page, preprinted says invention disclosed in engineering notebooks number; and my handwriting, "ECM 373." Preprinted again, on pages - - - and again in my handwriting, "1 through 100."

Q. Referring back to paragraph 6 where there were dates of January 10, 1967, for completion of construction of apparatus and testing, were there other dates crossed out?

A. Yes, it appears that an earlier date, December 15,

1966, was crossed out in both instances.

230 Q. Were both the December and January dates put in in your handwriting?

A. Yes.

231 Q. Do you recall changing that date?

A. No.

232 Q. Will you now turn to page 36-2 and read what is entered there?

A. The heading is brief chronology. "Item 1, March, 1966: idea became obvious to inventor that TV sets could be used (in the home) for more than passive viewing. In particular, considering the present

A. surrounding of 'participating' games and sports versus the much deplored excess of 'spectator' sports, games, etc., sparked the idea to use the TV set for such games as chess, checkers (or other games imitative of various board games). Games of chance, skill, acuity (mental and physical). Sports games such as target shooting, car racing, war games and so on. It was also conceived that this approach could be extended to clinical testing, educational, medical and other applications. Some of the above applications, as well as others, have been gathered

in the reference notebook ECM 373." In attachment No. 2, page 66 of the notebook and page 2 of the attachment; Item 2, September 1, 1966, first written disclosures. Item 3, December 20, 1966, formal memo approval agreement to proceed between H. Campman and R. H. Baer. Item 4, January 10, 1967, first breadboard model capable of black-and-white and color TV gaming. Item 5, June 15 and 16, 1967, completed demos to management, see notebook page 66.

Q. Now, would you go to page 3 and read what appears on that page?

A. Descriptive title, my handwriting, "TV gaming."

A. under old method or apparatus, if any, in my

C. handwriting, "none." Under disadvantages of old apparatus or method, a slash line. Under advantages of new apparatus or method, in my handwriting,

A. "invention potentially allowed everyone of the

. tens of millions of presently operative TV sets, as well as new and future sets to be used not only for passive viewing, but also for cooperative

. man-machine interchanges." Under the heading,

. Features Believed to be New, in my handwriting,

"Use of standard TV set for cooperative use by one or more persons for game playing, etc." Finally under details, in my handwriting, "See data attached: one, original disclosure data, September 1, 1966, through June, 1967. Item 2, engineering notebook ECM No. 373 pages 1 through 100. Item 3, miscellaneous notes generated during work done on the invention in December of '66 and January, '67."

A. Yes.

Q. Now, you have stated that the exhibit itself is a Xerox copy of the document?

A. Yes, that is correct.

Q. Do you know where the original of that document is?

A. No, I do not.

Q. To the best of your knowledge, does this document accurately reflect your thinking as of the time you prepared it?

A. Yes.

Q. At that time and in the document you referred only to TV sets and not to raster scan TV type displays, did you not?

A. Yes, in the pages we just read, yes.

Q. With respect to the item in paragraph 4 on page 36-1,

it states that, "you first thought of this in March of 1966 at your home?

A. Yes.

Q. Do you recall your earlier testimony to the effect that you thought of this TV gaming idea around August of 1966 while at the East Side Bus Terminal in New York City?

A. Yes, I am well aware of what I said earlier and I can't reconcile the two.

Q. Have you seen this exhibit or the original of it at any time since the day that it was prepared by you?

A. Not that I am aware of.

Q. Now, the date of Mr. Solomon's signature is June 26, 1967, and that of Mr. Campman, June 27, 1967. Those dates are ten or eleven days respectively after the June 16 date when you prepared the document; was there any particular reason for the delay in their signing?

A. No, I suspect Mr. Solomon was sitting on the document for ten days.

Q. On page 2 under the No. 5, you have set forth the dates of June 15 and 16, 1967, as when you completed

demos to management. This document was also prepared on that same day, was it not, the latter of the two days that you completed the demonstrations?

A. Yes.

243 Q. Do you recall the occasion for preparing that document on that day? Was there any special reason for doing it?

A. I don't recall. I can only speculate that somebody asked me something to the effect of "when are you going to get the disclosure down here?"

244 Q. In other words, the reception was favorable enough that it was thought that a patent disclosure form ought to be filled out?

A. That is right.

245 Q. Do you recall anything specific in that regard?

A. No, I don't.

246 Q. Do you recall any particular person suggesting that you should prepare the form?

A. No, I don't.

247 Q. The notebook referred to in here, is it ECM No. 373?

A. Yes.

248 Q. And that was marked as Exhibit 16 previously, was it not?

A. That is correct.

Q. And the original disclosure data listed on page 3 with the date September 1, 1966, that was your first written disclosure, was it not, which was in Exhibit 9-2 through 9-10?

A. That is right.

Q. And that was reproduced in the first few pages of Exhibit 16, was it not?

A. That is right.

Q. Would you refer now to Exhibit 37-1, 2 and 3? Can you identify that for us?

A. Yes, that is another patent disclosure sheet - sheets, rather - filled out in my handwriting on 5 January, '68. The documents are out of order, I mean, out of sequence. This, 37-1 should have preceded 36-1.

Q. You mean chronologically?

A. No, I am sorry, that is 1968.

Q. And what does this patent disclosure sheet relate to?

A. Would you like me to read it? The title is in my handwriting, "Method for local editing of RF TV transmission." And under problem solved, I state, "to modify a standard TV receiver displaying

the modulation of the RF transmission without entering the TV set."

MR. WELSH: It is 5:05; I think we can recess for the day.

(Whereupon, the deposition in the above-entitled matter was adjourned at 5:05 p.m.)

Ralph H Tyler
Deponent

THE STATE OF NEW HAMPSHIRE)
) SS.
COUNTY OF Hillsborough)

Subscribed and sworn to before me this 10th day of May 19 76.

Marilyn E. Trapalis
~~Justice of the Peace and/or~~
Notary Public

Marilyn E. Trapalis
Notary Public
My Commission Expires March 19, 1980

EXHIBITS

No.	Page	Description
33	3	Baer breadboard No. 5.
34	13	Baer breadboard No. 6.
35	18	Baer breadboard No. 7
35A	18	Rifle that goes with Exhibit No. 35.
36-1 through 36-3	73	Patent disclosure sheets, three pages.
37-1 through 37-3	73	Patent disclosure sheets of January 5, 1968, three pages.